

WHAT IS CLAIMED IS:

1. A method for preventing or minimizing loss of bone mineral in mammals which method comprises
5 administering to a mammal an amount of an aminoalkylenephosphonate or a pharmaceutically acceptable salt thereof which is effective to prevent or minimize loss of bone mineral density.
- 10 2. The method according to Claim 1 wherein said aminoalkylenephosphonate has at least one $R-N(Alk-PO_3H_2)_2$ group wherein R can be an aliphatic or cyclic moiety, and Alk is an alkylene group having from 1 to 4 carbon atoms.
- 15 3. The method according to Claim 1 wherein said aminoalkylenephosphonate has at least two $RR'N-Alk-PO_3H_2$ groups wherein R and R' can be, same or different, aliphatic or cyclic moiety, and Alk is an alkylene group having from 1 to 4 carbon atoms.
- 20 4. The method according to Claim 2 or Claim 3 wherein the amine moiety of the aminoalkylenephosphonate represented by the $R-N=$ and $RR'N-$ in the $R-N(Alk-PO_3H_2)_2$ and $RR'N-Alk-PO_3H_2$ groups is derived from either an
25 aliphatic or a cyclic polyamine in which hydrogen atoms bonded to the nitrogen atoms in the amine moiety are partially or completely substituted by an alkylphosphonate group.
- 30 5. The method according to Claim 1 wherein said aminoalkylenephosphonate is an aminomethylenephosphonate.
6. The method according to Claim 1 wherein said aminoalkylenephosphonate is 3,6,9,15-
35 tetraazabicyclo[9.3.1]tetradeca-1(15),11,13-triene-3,6,9-trimethylenephosphonic acid (PCTMP).

7. The method according to Claim 1 wherein said aminoalkylenephosphonate is 1,4,7,10-tetraazacyclododecane-1,4,7,10-tetramethylenephosphonic acid (DOTMP).

8. The method according to Claim 1 wherein said aminoalkylenephosphonate is N,N'-bis(methylenephosphonic acid)-2,11-diaza[3.3](2,6)pyridinophane (BP2MP).

9. The method according to Claim 1 wherein said aminoalkylenephosphonate is N,N-bis(methylenephosphonic acid)-2-(aminomethyl)pyridine (AMPDMP).

10. The use of an aminoalkylenephosphonate or a pharmaceutically acceptable salt thereof in the manufacture of a pharmaceutical formulation for preventing or minimizing loss of bone mineral in mammals.

11. The use of an aminoalkylenephosphonate or a pharmaceutically acceptable salt thereof according to Claim 10 wherein said aminoalkylenephosphonate has at least one $R-N(Alk-PO_3H_2)_2$ group wherein R can be an aliphatic or cyclic moiety, and Alk is an alkylene group having from 1 to 4 carbon atoms.

12. The use of an aminoalkylenephosphonate or a pharmaceutically acceptable salt thereof according to Claim 10 wherein said aminoalkylenephosphonate has at least two $RR'N-Alk-PO_3H_2$ groups wherein R and R' can be, same or different, aliphatic or cyclic moiety, and Alk is an alkylene group having from 1 to 4 carbon atoms.

13. The use of an aminoalkylenephosphonate or a pharmaceutically acceptable salt thereof according to Claim 11 or Claim 12 wherein the amine moiety of the

aminoalkylenephosphonate represented by the R-N= and RR'N-
in the R-N(Alk-PO₃H₂)₂ and RR'N-Alk-PO₃H₂ groups is derived
from either an aliphatic or a cyclic polyamine in which
hydrogen atoms bonded to the nitrogen atoms in the amine
5 moiety are partially or completely substituted by an
alkylphosphonate group.

14. The use of an aminoalkylenephosphonate or a
pharmaceutically acceptable salt thereof according to
10 Claim 10 wherein said aminoalkylenephosphonate is an
aminomethylenephosphonate.

15. The use of an aminoalkylenephosphonate or a
pharmaceutically acceptable salt thereof according to
15 Claim 10 wherein said aminoalkylenephosphonate is
3,6,9,15-tetraazabicyclo[9.3.1]tetradeca-1(15),11,13-
triene-3,6,9-trimethylenephosphonic acid (PCTMP).

16. The use of an aminoalkylenephosphonate or a
20 pharmaceutically acceptable salt thereof according to
Claim 10 wherein said aminoalkylenephosphonate is
1,4,7,10-tetraazacyclododecane-1,4,7,10-
tetramethylenephosphonic acid (DOTMP).

25 17. The use of an aminoalkylenephosphonate or a
pharmaceutically acceptable salt thereof according to
Claim 10 wherein said aminoalkylenephosphonate is N,N'-
bis(methylenephosphonic acid)-2,11-
diaz[3.3](2,6)pyridinophane (BP2MP).

30 18. The use of an aminoalkylenephosphonate or a
pharmaceutically acceptable salt thereof according to
Claim 10 wherein said aminoalkylenephosphonate is N,N'-
bis(methylenephosphonic acid)-2-(aminomethyl)pyridine
35 (AMPDMP).